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Archeological Survey For Bridge Replacements On County Road 39 In Victoria County, FM 532 In Lavaca County, FM 951 In Dewitt County, And FM 108 In Gonzales County, Texas

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Archeological Survey For Bridge Replacements On County Road 39 In Victoria County, FM 532 In Lavaca County, FM 951 In Dewitt County, And FM 108 In Gonzales County, Texas

ARCHEOLOGICAL SURVEY FOR BRIDGE REPLACEMENTS ON COUNTY ROAD 39 IN VICTORIA COUNTY, FM 532 IN LAVACA COUNTY, FM 951 IN DEWITT COUNTY, AND FM 108 IN GONZALES COUNTY, TEXAS CSJ NOS. 0913-27-051, 1007-03-017, 0839-04-010, and 0715-02-013

by

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TABLE OF CONTENTS

LIST OF FIGURES

ABSTRACT AND MANAGEMENT SUMMARY

On November 12–13 and December 17–18, 2012, personnel from Prewitt and Associates, Inc., conducted archeological surveys for the Texas Department of Transportation for the proposed replacement of four bridges in the Yoakum District under Texas Antiquities Permit No. 6374. The bridge replacements are as follows: (1) on County Road 39 at an unnamed stream in Victoria County (CSJ 0913-27-051); (2) at the edge of Moulton, Texas, on FM 532 at the West Prong of the Lavaca River in Lavaca County (CSJ 1007-03-017); (3) on FM 951 at the North Fork of Queens Creek in DeWitt County (CSJ 0839-04-010); and (4) near Smiley, Texas, on FM 108 at a branch of Elm Creek in Gonzales County (CSJ 0715-02-013). The project areas range in size from 0.7 to 2.9 acres, with all but one restricted to existing highway rights of way. The County Road 39 project area consists of both existing right of way and temporary construction easements. The surveys were accomplished through inspection of surface exposures and cut banks and excavation of 29 backhoe trenches. Project archeologist Aaron Norment performed the surveys, assisted by Damon Burden and Rob Thrift; Ross Fields served as principal investigator.

The County Road 39, FM 532, and FM 951 project areas were found to be devoid of archeological sites. No further work is recommended for them. A single archeological site, 41GZ243, was identified in the FM 108 project area. Site 41GZ243 is considered to be potentially eligible for listing in the National Register of Historic Places and designation as a State Archeological Landmark, but no further work is recommended because the site is buried and will not be affected by the bridge replacement. If project plans change to include subsurface impacts in the area near 41GZ243, archeological testing is recommended to assess the site.

INTRODUCTION AND PROJECT DESCRIPTIONS

On November 12–13 and December 17–18, 2012, personnel with Prewitt and Associates, Inc., conducted archeological surveys of four proposed bridge replacement locations in the Texas Department of Transportation's (TxDOT) Yoakum District (Figure 1). The four locations are in DeWitt, Gonzales, Lavaca, and Victoria Counties. The surveys were needed because TxDOT plans to replace the existing bridges and each location was considered to have the potential for archeological deposits. Fieldwork was performed by a team of two archeologists, with Aaron Norment serving as the project archeologist and Damon Burden or Rob Thrift assisting as field archeologist. The surveys identified a single archeological site, 41GZ243, in the Gonzalez County project area. This project was authorized by the State of Texas Antiquities Code (Texas Natural Resource Code of 1977, Title 9, Chapter 191, VTCS 6145-9) and conducted under Texas Antiquities Permit No. 6374.

County Road 39 at Unnamed Stream, Victoria County (CSJ 0913-27-051)

The proposed work on County Road (CR) 39 will replace the current concrete bridge over a small unnamed stream with a 27-ft-long and 26-ft-wide bridge consisting of three 9x5x26-ft concrete box culverts. Total improvements will span approximately 427 ft, including the bridge approaches 200 ft northeast and southwest of the bridge. Construction will occur within the 34-ft-wide existing right of way and potentially within 19-ft-wide temporary construction easements (TCE) on both sides of CR 39 running the entire project length, pending permission from the landowner. The horizontal Area of Potential Effects (APE) consists of 0.33 acres of existing county-owned right of way and 0.37 acres of adjacent privately owned property (0.185 acres on either side of the existing right of way), totaling 0.70 acres. The vertical APE is expected to be as deep as 10 ft adjacent to the bridge but 3 ft or less over most of the project area.

FM 532 at West Prong of the Lavaca River, Lavaca County (CSJ 1007-03-017)

The proposed work on Farm-to-Market Road (FM) 532 will replace the existing bridge on the West Prong of the Lavaca River and improve the approaches to the bridge in both directions. The new structure will be a 90-ft-long by 30-ft-wide concrete bridge; the approaches will be improved for 185 ft southwest and 175 ft northeast of the bridge, for a total project length of 450 ft. All work will occur within the ca. 70-ft-wide existing right of way. The horizontal APE measures 450x70 ft, amounting to 0.72 acres. The vertical APE is expected to be 3 ft or less over most of the project area, although deeper impacts of 20–40 ft are expected in the immediate area of the bridge.

FM 951 at North Fork of Queens Creek, DeWitt County (CSJ 0839-04-010)

The proposed work on FM 951 will replace the existing bridge on the North Fork of Queens Creek with a 105-ft-long concrete bridge and rework the approaches for 325 ft north and south of the bridge. Total project length will be 755 ft. All construction will take place within the approximately 80-ft-wide existing right of way. The horizontal APE measures 755x80 ft, or 1.4 acres. The depth of impacts is expected to be 3 ft or less over most of the project area, although deeper impacts (20–40 ft) likely will occur in the immediate area of the bridge.

FM 108 at Branch of Elm Creek, Gonzales County (CSJ 0715-02-013)

The proposed work on FM 108 will replace the existing 75-ft-long bridge on a branch of Elm Creek with a 100-ft-long concrete bridge and rework the approaches for 407 ft north and 533 ft south of the bridge, for a total project length of 1,040 ft. No new right of way is needed, and all work will take place within the 120-ft-wide existing right of way. The horizontal APE measures

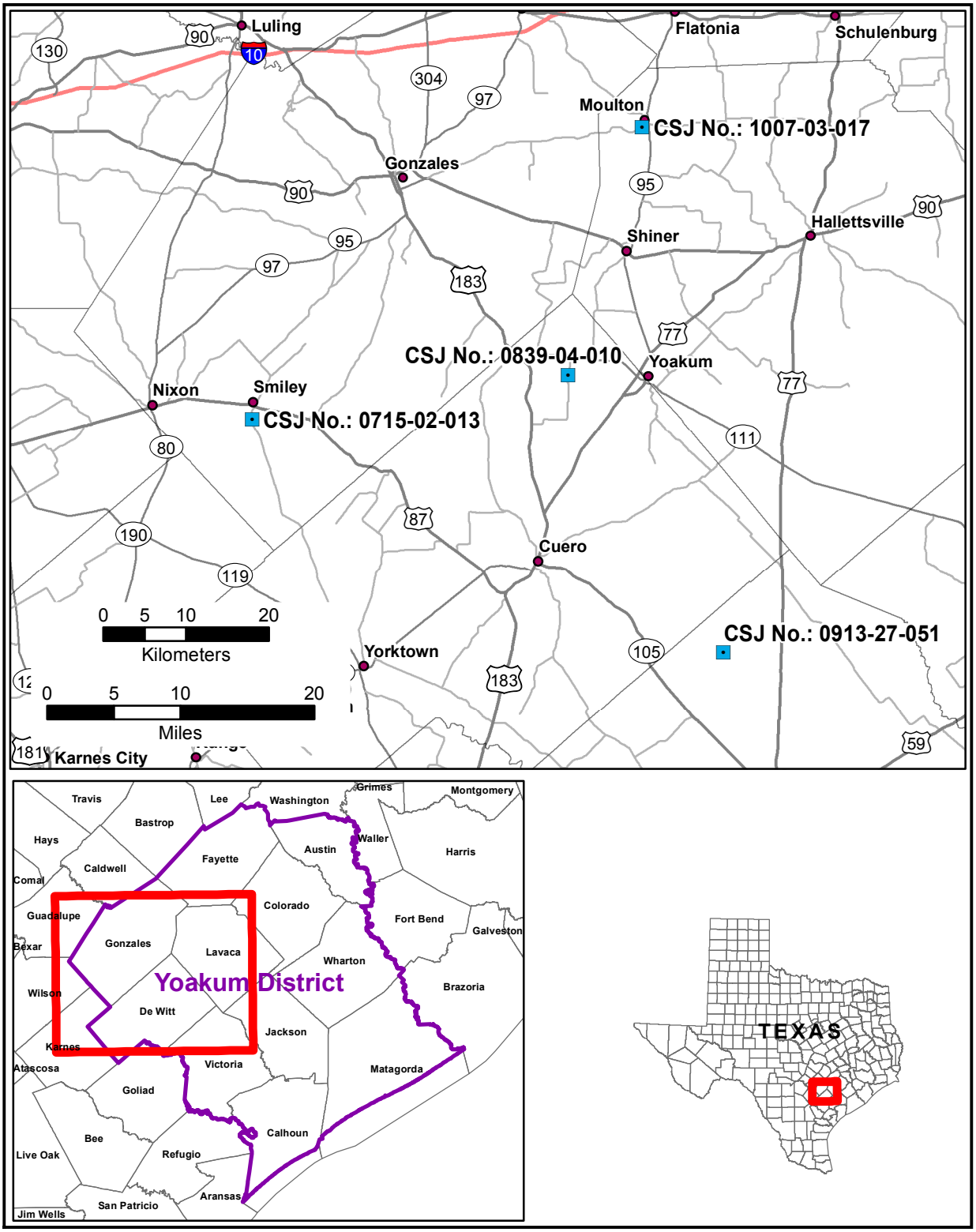

Figure 1. Map showing project locations.

1,040x120 ft, amounting to 2.9 acres. The vertical APE is expected to be 3 ft or less over most of the project area, although deeper impacts of 20–40 ft are expected in the immediate area of the bridge.

BACKGROUND INFORMATION

County Road 39 at Unnamed Stream, Victoria County (CSJ 0913-27-051)

The CR 39 project area crosses a shallowly incised unnamed stream in a rural upland setting (Figure 2). The stream, dry at the time of the survey, flows from northwest to southeast to its confluence with Garcitas Creek. The surface elevation is ca. 160 ft across the project area.

The APE has a regional subsurface geology dominated by Pleistocene Lissie Formation sands and silts, with some Holocene alluvium along nearby Garcitas Creek but none mapped along the unnamed stream (Bureau of Economic Geology 1987). Soils in the project area (100 percent) are mapped as poorly drained Garcitas gravelly loamy fine sand with 1 to 5 percent slopes, derived from Pleistocence-age loamy and sandy alluvium (Miller 1979; USDA-NRCS 2012a). Garcitas soils are clayey, mixed, active, hyperthermic Aquic Arenic Paleustalfs (USDA-NRCS 2012b).

Approximately 48 percent of the APE is existing county road right of way, which consists of a 16-ft-wide paved road with adjoining 9-ft-wide vegetated strips supporting various grasses, woody shrubs, and small trees. The 19-ft-wide TCEs on both sides of the road are patchy hardwood forests and grasslands being used as pasture. The APE is in the Post Oak Savannah ecoregion of Texas (Gould et al. 1960).

A check of the Texas Archeological Sites Atlas on November 1, 2012, revealed no recorded archeological sites within 1 km of the APE. The Atlas indicates that in May 1996, TxDOT performed a small survey within existing right of way 1 km north-northeast of the project area; no sites were found.

Based on the upland setting, lack of mapped Holocene-age alluvium, and ancient soils, the APE has little potential for deeply buried archeological sites. Any archeological remains present should be on or near the surface and hence susceptible to disturbance.

FM 532 at West Prong of the Lavaca River, Lavaca County (CSJ 1007-03-017)

The FM 532 project area is on the floodplain and adjacent lower valley margins of the West Prong of the Lavaca River on the southwest edge of the town of Moulton (Figure 3). Water

Figure 2. View to the north-northeast of the CR 39 project area.

Figure 3. View of the bridge and northeast approach in the FM 532 project area, with the town of Moulton beyond.

was present in the channel but not flowing at the time of the survey. The stream flows from northwest to southeast to its confluence with the main channel of the Lavaca River. Surface elevations range from 350 to 365 ft across the project area.

The subsurface geology is mapped as Miocene Oakville Sandstone (Bureau of Economic Geology 1979). Holocene alluvium is not mapped along this segment of the West Prong of the Lavaca River, but it is mapped just downstream. Three soils are mapped in the APE. Frequently flooded Navaca clay (63 percent) is immediately adjacent to the channel. Navaca clay is a smectitic, thermic Udertic Haplustoll formed in calcareous clayey and loamy alluvial sediments (USDA-NRCS 2012b). Northeast of Navaca clay is Greenvine clay loam (19 percent). Greenvine clay loam is a fine, smectitic, thermic Leptic Udic Haplustert formed in residuum from tuffaceous clays and sandstones (USDA-NRCS 2012b). Carbengle loam with 2 to 5 percent slopes is mapped at the southwestern end of the APE (18 percent) (Hyde et al. 1992; USDA-NRCS 2012a). Carbengle loam is a fine-loamy, carbonatic, thermic, Udic Calciustoll formed in residuum from weakly cemented calcareous sandstone (USDA-NRCS 2012b).

The entire project area is within existing highway right of way consisting of FM 532 and 20–25 ft of vegetated areas supporting grasses, forbs, and shrubs and a few small trees on either side of the road. Lands adjacent to the project area are a mix of residential properties and open pastures. The area is situated along the boundary of the Blackland Prairie and Post Oak Savannah of Texas (Gould et al. 1960).

A check of the Texas Archeological Sites Atlas on November 1, 2012, revealed no recorded archeological sites within 1 km of the APE. The Atlas indicates that two projects have been done near the FM 532 project area. One was a survey within Moulton 0.4 km north of the project area in which no archeological sites were recorded. The second was conducted by the Lower Colorado River Authority between 2006 and 2011 and was ca. 1.1–1.2 km east of the project area; three sites were recorded, consisting of a prehistoric lithic procurement/scatter and historic trash scatter (41LC22), a historic church site (41LC25), and a historic trash scatter (41LC28).

Despite being partly in the floodplain, Holocene alluvium is not mapped within the APE. Hence, the APE has a limited potential for deeply buried archeological sites. Any archeological remains present should be on or near the surface and hence susceptible to disturbance.

FM 951 at North Fork of Queens Creek, DeWitt County (CSJ 0839-04-010)

The FM 951 project area crosses the shallowly incised, intermittent North Fork of Queens Creek in a rural upland setting (Figure 4). Water was present in the creek at the time of the survey but not flowing; the stream flows from northeast to southwest. Surface elevations are ca. 300 ft across the project area.

The subsurface geology is dominated by Miocene Fleming Formation clays and sandstones (Bureau of Economic Geology 1979); Holocene alluvium is not mapped along this segment of the North Fork of Queens Creek. Soils in most of the project area (84 percent) are mapped as occasionally flooded Meguin silty clay loam (Miller 1978; USDA-NRCS 2012a), which are

Figure 4. View to the north of the FM 951 project area.

derived from calcareous loamy Quaternary alluvium. Meguin series soils are fine-silty, mixed, superactive, hyperthermic Fluventic Haplustolls (USDA-NRCS 2012b). The northern tip of the project area (16 percent) is mapped as Houston Black clay, which forms in calcareous uplands (Miller 1978; USDA-NRCS 2012a). Houston series soils are very-fine, smectitic, thermic Oxyaquic Hapluderts (USDA-NRCS 2012b).

The entire project area is within existing state-owned right of way consisting of FM 951 and ca. 28 ft of vegetated areas with various grasses, woody shrubs, and small trees on either side of the road. Adjacent properties are cleared pastures for cattle grazing and hay production, with one driveway leading to a large workshop several hundred feet west of the right of way. The project area is in the Blackland Prairie ecoregion of Texas (Gould et al. 1960).

A check of the Texas Archeological Sites Atlas on November 1, 2012, revealed that the FM 951 project area is within the Cuero I National Register historic district, but no recorded archeological sites or previous archeological projects are indicated within 1 km of the bridge replacement.

Based on the upland setting and lack of mapped Holocene-age alluvium, the APE has little potential for deeply buried archeological sites. Any archeological remains present should be on or near the surface and hence susceptible to disturbance.

FM 108 at Branch of Elm Creek, Gonzales County (CSJ 0715-02-013)

The FM 108 project area is on the broad, flat floodplain of Elm Creek south of the town of Smiley (Figure 5). The bridge to be replaced crosses a secondary channel ca. 0.6 km south of the main Elm Creek channel. Water was present and flowing at the time of the survey. The stream flows from west to east to its confluence with Elm Creek proper. Surface elevations are ca. 245–250 ft across the floodplain.

The APE is mapped as Holocene alluvium, including low terrace deposits 3–8 ft above the floodplain (Bureau of Economic Geology 1979). Soils in the APE are mapped entirely as frequently flooded Degola clay loam (USDA-NRCS 2012a). Degola soils are very deep, well drained, moderately permeable soils that formed in recent alluvium and are on nearly level floodplains (USDA-NRCS 2012b). Degola soils are fine-loamy, mixed, superactive, hyperthermic

Figure 5. View to the north of the east side of the FM 108 project area south of the bridge.

Cumulic Haplustolls (USDA-NRCS 2012b).

The entire project area is within existing state-owned right of way consisting of FM 108 and 40–50 ft of vegetated areas with a variety of grasses, forbs, shrubs, and few small trees on either side of the road. Outside of the right of way on adjacent property, much of the land is overgrown with dense brush and a variety of hardwood trees. County Road 211 intersects the right of way in the southwestern portion of the APE. The project area is located within the Post Oak Savannah ecoregion of Texas (Gould et al. 1960).

A check of the Texas Archeological Sites Atlas on November 1, 2012, revealed no recorded archeological sites within 1 km of the APE and no archeological surveys conducted in the area.

Located on the floodplain with extensive mapped Holocene alluvium, the APE has the potential for deeply buried, intact archeological sites that could be minimally disturbed.

METHODS AND RESULTS

County Road 39 at Unnamed Stream, Victoria County (CSJ 0913-27-051)

Archeologists walked the entire length and width of the existing right of way within the project area (0.33 acres), examining the surface and existing exposures for evidence of archeological deposits. Ground surface visibility was generally less than 10 percent, with the exception of a few cut banks exposed along the stream channel. Survey was limited to the existing right of way, as there was no right of entry to the TCEs (0.37 acres). Eight trenches were excavated measuring 6.5–7.0 m long, 0.6 m wide, and 0.5–1.4 m deep. The distribution of trenches was uniform with two in each quadrant relative to the bridge (Figure 6). Locating suitable places to trench was not difficult, as there are no buried utilities and the existing right of way is not extensively disturbed; however, with only about 9 ft of right of way bordering the road, there was little room to maneuver. Trenches were substituted for shovel tests, in spite of the fact that deeply buried sites were not anticipated, because of the much greater subsurface visibility they provide. The trench coverage rate (24.2 per acre for the existing right of way; 11.4 per acre for the total APE) exceeds the minimum shovel testing intensity specified for surveys of this size (3.0 per acre) in the Texas Historical Commission's Archeological Survey Standards for Texas. Survey methods complied with applicable standards defined or referenced in 13 TAC 26.20 and Texas Historical Commission policy.

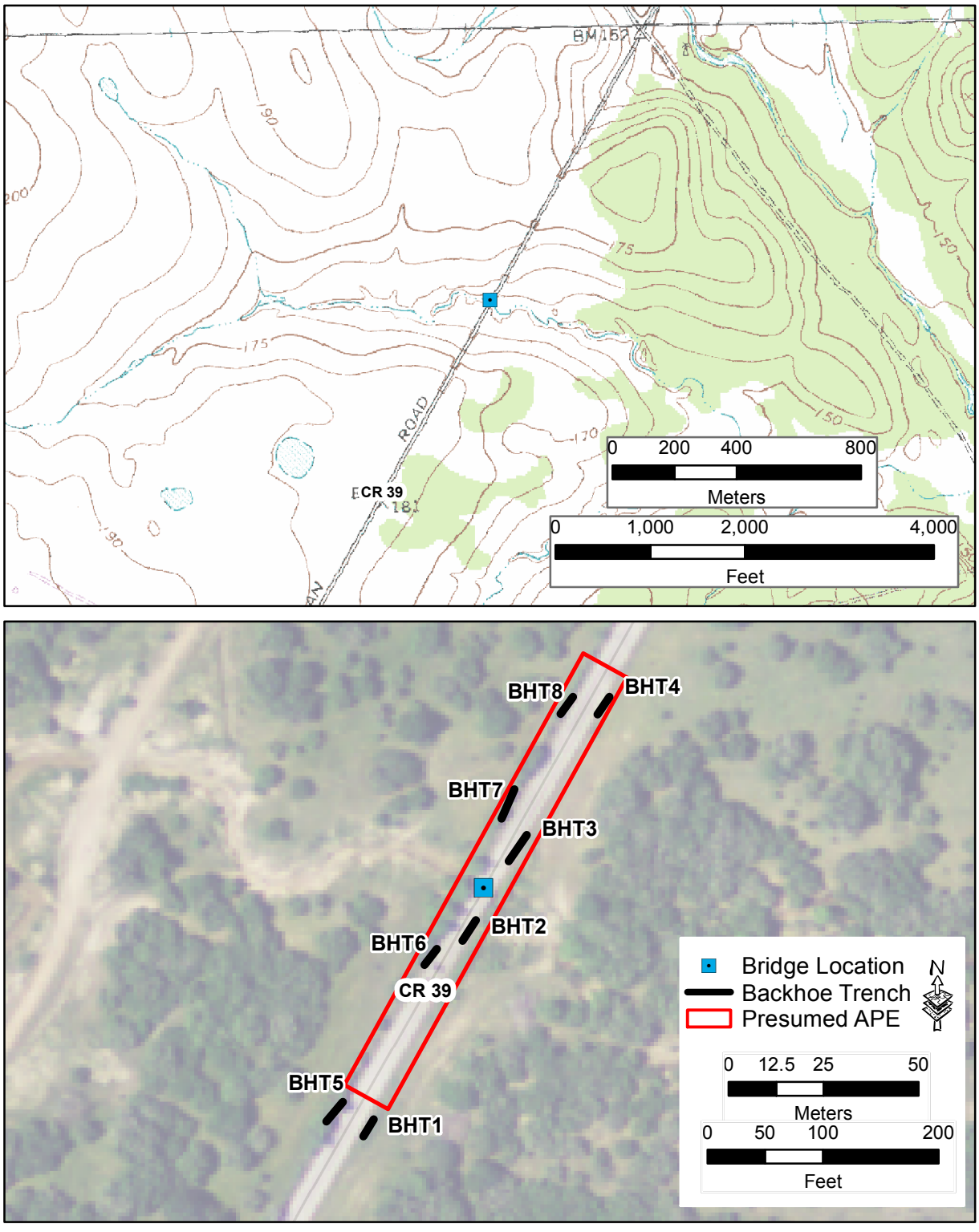

Figure 6. Topographic map and aerial photograph of the CR 39 project area.

No archeological materials were observed on the surface, in cut banks, or in the any of the eight trenches. Trenching confirmed the lack of Holocene-age alluvium along this branch. A layer of road fill ranging from 0.30 to 0.50 m thick was encountered at the top of many trenches that was a mix of sand and large stream-rolled cobbles (see Appendix for trench descriptions). Below the construction fill was rodent-disturbed gravelly loamy to clayey sand, sandy loam, silty sand, coarse- to fine-grained sand, and silty clay representing Garcitas soils developed in Pleistocene deposits, which typically are clayey sediments with abundant iron and manganese staining. Trench profiles were generally consistent within the APE. Outside the right of way, the adjacent TCEs lack construction fill and represent what the ground surface looked like prior to road construction. Observations of eroded areas, cut bank exposures, and cattle trails in the TCEs from the right of way did not identify any archeological materials and indicate that the same sediments are present in the TCEs as were exposed in the backhoe trenches. Hence, no Holocene alluvium is present within the TCEs.

The bridge replacement on CR 39 has very little potential to impact archeological sites with sufficient integrity to warrant listing in the National Register of Historic Places or designation as State Archeological Landmarks, and no further work is recommended. Survey demonstrated that there are no archeological sites in the existing right of way. The adjacent TCEs could not be surveyed, but the likelihood of intact archeological sites there is considered low because any archeological remains in this setting would be on or near the surface, which has been disturbed by erosion and livestock trampling. Further, no evidence of archeological remains was observed on the surface there or in cut banks from the edges of the right of way.

FM 532 at West Prong of the Lavaca River, Lavaca County (CSJ 1007-03-017)

At the time fieldwork was conducted, no construction plans were available for this bridge replacement, and it was assumed the APE would be up to 1,000 ft long. Following completion of fieldwork, construction plans became available and indicated the APE actually is 450 ft long. Hence, some field efforts (surface inspection and excavation of one trench) were expended on areas outside the true APE. Archeologists walked the entire 1,000x70-ft area within the existing right of way (1.61 acres), examining the surface and existing exposures for evidence of archeological deposits. Ground surface visibility generally was less than 10 percent.

Surface inspection revealed that the project area is substantially disturbed. The existing bridge is on fill sections that are as much as 1 m thick at the ends of the bridge but quickly thin to 0.5 m or less. The road is essentially at grade as it traverses the upland slopes adjoining the floodplain. There are ca. 20–25 ft of right of way on either side of the road. Where fill sections are present, they occupy 25–75 percent of the roadside right of way, and ditches typically 0.5 m deep or less usually adjoin the fill sections. A public road crosses a culvert in the APE just northwest of the bridge before paralleling the north bank of the creek, and CR 291 joins FM 532 from the south just beyond the southwest end of the APE. Bedrock is exposed in the shallow ditch north of the road near the southwest end of the APE and just south of it along CR 291. Buried utilities are present along the full length of the APE. Two sewer lines connecting with a small pump station immediately outside the right of way are north of the road on the northeast side of the creek, leaving no room for safe excavation in this area. Two AT&T lines, one on each side of the road, run the length of the project area, and a city water line parallels the southeast right-of-way edge. One of the AT&T lines and the water line are within 6 ft of each other, leaving little undisturbed right of way on the southeast side of FM 532.

The numerous buried utilities and ditches and fill sections made finding suitable places to dig trenches difficult, and as a result only three trenches were excavated (Figure 7); they measured 4.5–7.0 m long and 1 m wide and were 1.3–1.4 m deep. Trench 1 was northeast of the bridge on the south side of the road ca. 130 ft from the stream channel, just outside the marked water line and AT&T line. Only a 10–12-ft-wide strip remained for trenching here. Trench 2 was ca. 160 ft southwest of the channel on the south side of the road, also just outside the water line and AT&T line. Very little room was available for trenching between the utilities and roadway. Trench 3 was ca. 300 ft southwest of the stream channel on the north side of the road,

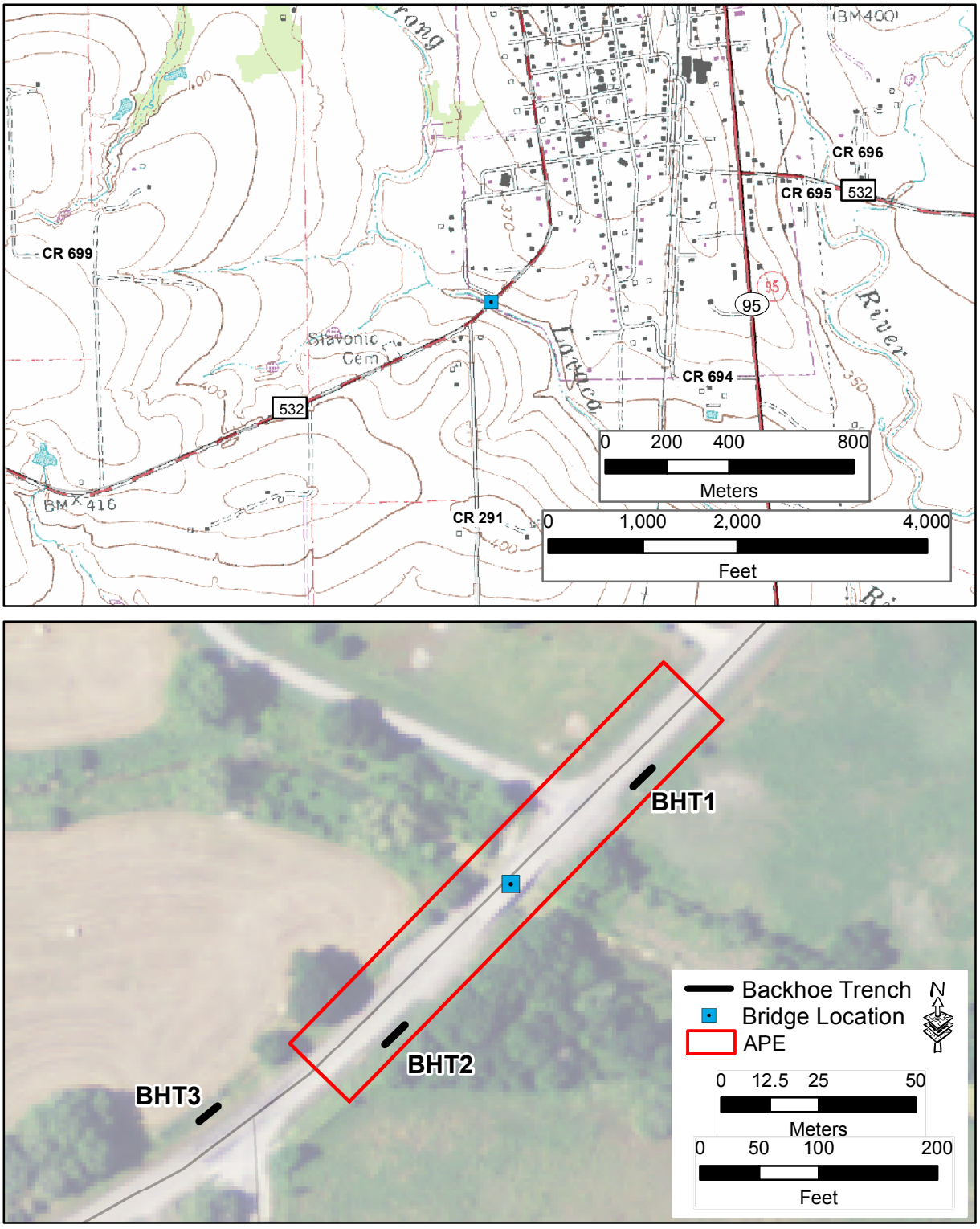

Figure 7. Topographic map and aerial photograph of the FM 532 project area.

outside the actual APE. Due to the bend in the road and the AT&T line, only ca. 12 ft of right of way was available for trenching. Trenches were substituted for shovel tests, in spite of the fact that deeply buried sites were not anticipated, because of the much greater subsurface visibility they provide. Despite the constraints imposed by extensive disturbance, the trench coverage rate (2.8 per acre for the actual APE) approximates the minimum shovel testing intensity specified for surveys of this size (3.0 per acre) in the Texas Historical Commission's Archeological Survey Standards for Texas. Survey methods complied with applicable standards defined or referenced in 13 TAC 26.20 and Texas Historical Commission policy.

Each trench revealed 0.20–0.30 m of construction fill with sterile clayey sediments below (see Appendix). Generally, dark gray to very dark grayish brown clay underlies the construction fill. Trenches 1 and 2 encountered dense black clay perhaps representing Holocene alluvium in the lower levels, while Trench 3, at a slightly higher elevation, terminated at pale yellow clay probably representing Miocene deposits. No archeological materials were observed on the surface or in the any of the three trenches.

Survey demonstrated that the APE is extensively disturbed and that there are no archeological sites in the existing right of way. Hence, the bridge replacement on FM 532 has no potential to impact archeological sites with sufficient integrity to warrant listing in the National Register of Historic Places or designation as State Archeological Landmarks. No further work is recommended.

FM 951 at North Fork of Queens Creek, DeWitt County (CSJ 0839-04-010)

Archeologists walked the full length and width of the APE (1.4 acres), examining the surface and existing exposures for evidence of archeological deposits. Due to dense grass growth, ground surface visibility was generally less than 10 percent. Surface inspection revealed that the project area is not extensively disturbed. The existing bridge sits atop fill sections that are as much as 1 m thick at the ends of the bridge but quickly thin to 0.5 m or less. On either side of the 24-ft-wide road, the right of way measures ca. 28 ft in width. A driveway crosses a culvert in the ditch near the south end of the project area and leads to a workshop several hundred feet west of the roadway; no other roads intersect the right of way. All four quadrants have ditches, which are shallow away from the bridge and more pronounced close to it. Two of the four ditches are eroded where they intersect the creek channel. Northwest of the bridge is a large wash where water plunges over a naturally cut earthen wall; runoff has exaggerated the ditch here, resulting in a cut 2–5 ft wide, 15–20 ft long, and 2–3 ft deep. Similarly, the ditch just southeast of the bridge has been cut to a depth of 2–3 ft for about the same distance from the bridge. Large fragments of concrete and rubble fill were observed within and near both washes. Additionally, more concrete rubble was observed outside of the APE on private property to the east, where massive sections of rubble have been dumped in what looks like an attempt to fill in portions of the stream channel. A single buried utility runs along the western boundary of the APE. An AT&T line is marked for the entire length of the project, and the line is visible where it crosses the stream because it exits the ground and crosses through the air between power poles.

Since disturbance is modest, finding suitable places to excavate trenches was not difficult. Seven trenches measuring 6.0–7.0 m long, 1 m wide, and 1.5–1.8 m deep were excavated (Figure 8). Trenches were substituted for shovel tests, in spite of the fact that deeply buried sites were not anticipated, because of the much greater subsurface visibility they provide. The trench coverage rate (5.0 per acre) exceeds the minimum shovel testing intensity specified for surveys of this size (3.0 per acre) in the Texas Historical Commission's Archeological Survey Standards for Texas. Survey methods complied with applicable standards defined or referenced in 13 TAC 26.20 and Texas Historical Commission policy.

Trench 1 was immediately southwest of the bridge, ca. 75 ft from the stream channel. Trench 2 also was southwest of the bridge, but ca. 320 ft from the stream channel. Trench 3 was southeast of the bridge and ca. 300 ft south of the stream channel. Trenches 4 and 5 were northwest of bridge, ca. 125 and 320 ft from the channel. Trenches 6 and 7 were northeast of the bridge, ca. 310 and 110 ft north of the stream channel. Construction fill was present

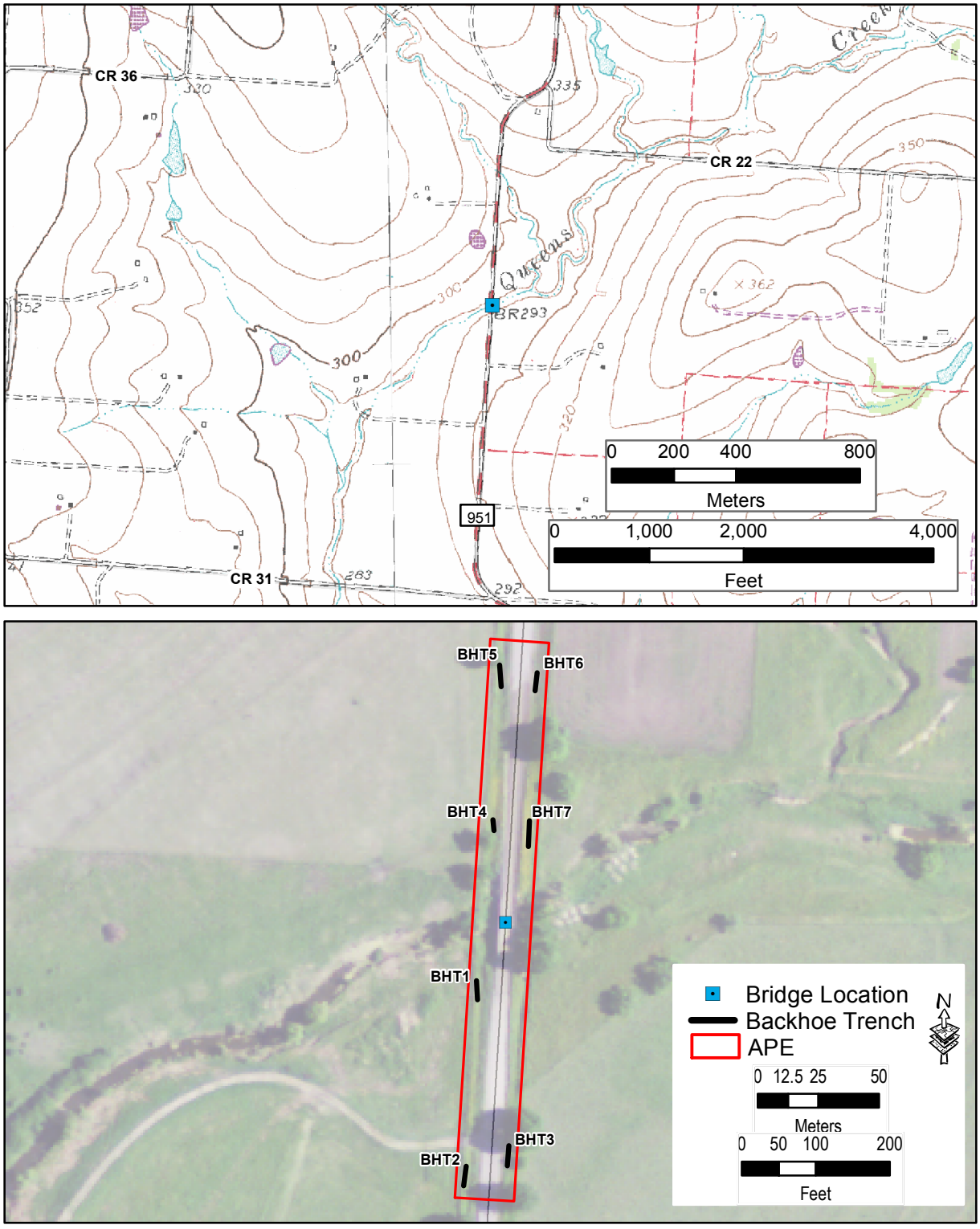

Figure 8. Topographic map and aerial photograph of the FM 951 project area.

within the upper 0.1–0.5 m of most trenches (see Appendix). Trench 1, nearest the stream, had a dense layer of introduced fill more than 1 m thick with ca. 0.4 m of what appeared to be old road base underlying it. In situ clayey sediments were encountered at 1.5 m below the surface. Most of the other trenches had dark gray to black clayey sediments beneath the construction fill, sometimes with pockets of sand or silty sediments, to depths of 0.7–1.5, apparently representing Holocene alluvium. Clayey zones with abundant carbonates probably representing Miocene deposits were observed at the bottom of Trenches 4–7. Trench 3 exhibited a distinctive profile. The upper 0.6 m was a dense very dark gray clay loam, which was underlain by a layer of fine-grained sand over 1 m thick. The sand is likely related to filling of an ancient channel of this portion of Queens Creek, with the upper clayey sediments reflecting subsequent alluvial or colluvial deposition and soil formation.

No archeological materials were observed on the surface or in the any of the seven trenches. A concrete cattle-dipping vat on the eastern boundary of the APE just south of the stream channel was not recorded as a site because it does not appear to be very old (mid twentieth century?) and appears to part of a complex of features that are mostly outside the project area on private property. The vat measures ca. 20–25 ft long and just over 4 ft wide; the vat is entirely within the APE, abutting the right-of-way fence (Figure 9). The depth of the vat could not be measured because it is filled in with sediment. Farther north, entirely on private property outside the APE, is a concrete platform that may have been associated with the vat. This platform sits lower than the vat along the creek and is over 100 ft away. It is possible that the concrete rubble observed within the stream channel nearby might be associated as well, with all these features representing a cattle treatment/corral complex.

Survey demonstrated that there are no archeological sites in the existing right of way, and thus the bridge replacement on FM 951 has no potential to impact archeological sites with sufficient integrity to warrant listing in the National Register of Historic Places or designation as State Archeological Landmarks. No further work is recommended.

Figure 9. View to the south-southeast of remains of cattle-dipping vat along the east edge of the FM 951 project area.

FM 108 at Branch of Elm Creek, Gonzales County (CSJ 0715-02-013)

Archeologists walked the entire length and width of the project area within the existing right of way (2.9 acres), examining the surface and existing exposures for evidence of archeological deposits. Ground surface visibility generally was less than 10 percent, although cut banks along the stream provided some exposures of the subsurface deposits. Surface inspection revealed that the project area is not extensively disturbed. The existing bridge sits atop fill sections that are thickest (1.0–1.5 m) at the ends of the bridge and become thinner to the north and south. The typical roadway section is ca. 28 ft wide, and the right of way varies between ca. 50 ft wide on the west side of the road and ca. 40–45 ft wide on the east side. Close to the existing bridge, as much as half of the roadside right of way is occupied by fill sections, but this decreases to the north and south. Ditches between the road and right-of-way edges are minimal (less than 0.2 m deep) to nonexistent. County Road 211 crosses a culvert in the ditch southwest of the bridge near the southern end of the APE; no other roads intersect the right of way. Only one buried utility, a Verizon communications cable, is within the APE. The buried line runs along the entire length of the western boundary of the APE, parallel to the fence line. The line is clearly marked on both sides of the stream.

Locating suitable places to trench was not difficult because the existing right of way is not extensively disturbed. Eleven trenches measuring 6–8 m long, 1.0–1.25 m wide, and 1.2–2.0 m deep were excavated (Figure 10). Trenches were used for subsurface exploration because of the potential for deeply buried archeological remains and because they provide much greater subsurface visibility than shovel tests. The trench coverage rate (3.8 per acre) exceeds the minimum shovel testing intensity specified for surveys of this size (2.0 per acre) in the Texas Historical Commission's Archeological Survey Standards for Texas. Survey methods complied with applicable standards defined or referenced in 13 TAC 26.20 and Texas Historical Commission policy. Trench 1 was approximately 75 ft south of the Elm Creek branch on the west side of FM 108. Trench 2 was on the west side of the road ca. 450 ft south of the channel, just south of the County Road 211 intersection. Trenches 3, 9, and 4 were on the east side of FM 108, ca. 480, 375, and 200 ft south of the channel. Trenches 5, 11, and 6 were east of FM 108, ca. 65, 250, and 390 ft north of the creek. Trenches 7, 10, and 8 were on the west side of FM 108, ca. 420, 250, and 100 ft north of the creek.

Six of the trenches (Trenches 1, 5, 7, 8, 9, and 11) contained some amount of construction fill near the surface and extending as deep as 0.4 m. Trenches across the APE contained similar soil types, textures, and colors, but differed regarding the thickness of the various deposits. The floodplain of Elm Creek is an active depositional environment, and the trench profiles reflect this. In most cases, very dark brown to very dark grayish brown clay loam alluvium was encountered at or near the surface and immediately below construction fill, if present (see Appendix). The thickness of this deposit varied from 0.3 to 1.0 m. Generally, this was underlain by brown to very dark brown clay to sandy silt alluvium ranging from 0.2 to more than 1 m deep. Based on proximity to the stream, differences in topography, and trench depth, some variations in this basic profile were noted. Variations included thinner versions of the two main sediment zones underlain by dark clay deposits indicative of ancient alluvial activity within the floodplain. The amount of bioturbation also varied. Trench 3, for example, exhibited a high level of bioturbation, with the subsurface zone of brown sandy silt scarred by roots and rodent burrows. Trench 8, just northwest of the stream channel, presented the most dramatic profile with at least two buried surfaces at depths of 1.1 and 1.3 m. Pockets of alluvial silty sand were also present within the profile, as well as within the profile of Trench 11. Trenching confirmed the presence of Holocene alluvium throughout the project area and uncovered one archeological site, 41GZ243.

Site 41GZ243 was represented by three chert flakes, two fragments of burned clay, and one pitted and perhaps burned stone found in Trench 3 at the southern end of the APE (all artifacts were photographed and documented and returned to the ground when the trench was backfilled). These materials were found in both walls throughout the length of the 6-m trench. The cultural materials were at a depth of ca. 1.2 m below the surface in dark brown sandy silt alluvium, which underlay ca. 0.2 m of very

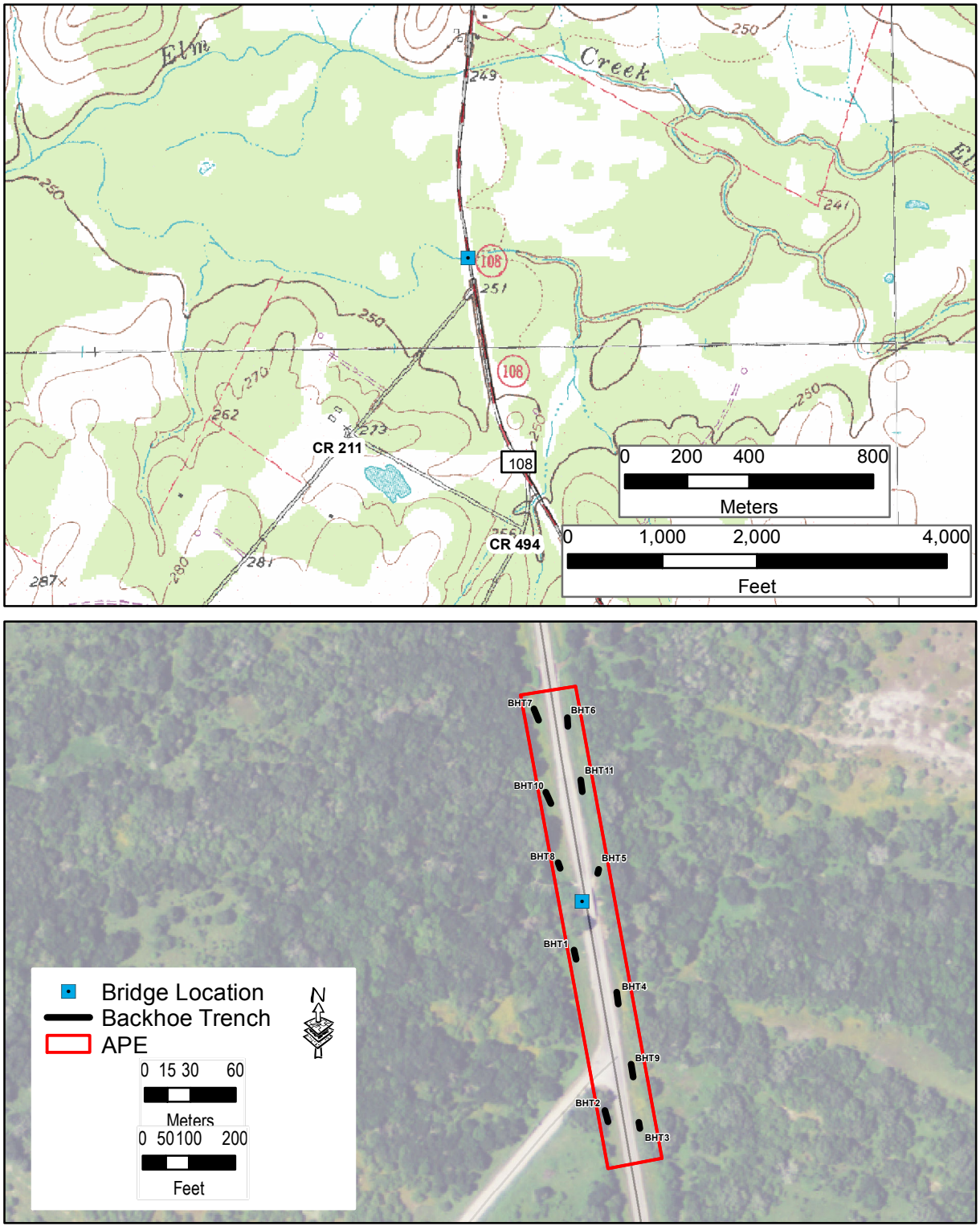

Figure 10. Topographic map and aerial photograph of the FM 108 project area.

dark grayish brown clay loam at the surface. The full thickness of the dark brown sandy silt is unknown, since it extended beyond the bottom of the trench at a depth of 1.7 m. The trench profile displayed extensive bioturbation in the form of root scars and rodent burrows (Figure 11), but the consistent depth of the artifacts suggests that the cultural deposit retains some degree of integrity. No cultural features were observed. All archeological materials observed were within state-owned right of way, and it is unclear if the site extends outside the right of way onto privately owned land. This certainly seems likely, though, particularly to the east based on landform extent. No cultural materials were found in Trench 2, ca. 70 ft from Trench 3 on the west side of FM 108, but this trench did expose similar alluvial sediments with a distinct buried soil at a depth of ca. 0.5 m. Trench 9 about 100 ft north of Trench 3 also contained no cultural materials; the sediments there were different than those in Trenches 2 and 3 to the south in that they had a higher clay content and were overlain by 0.4 m of construction fill. Trench 3 is close to the south end of the APE (ca. 80 ft), and no additional trenching was done farther south to determine the site extent in this direction; based on landform extent, though, 41GZ243 could extend beyond the APE to the south edge of the Elm Creek floodplain.

Site 41GZ243 is considered to be potentially eligible for listing in the National Register of Historic Places under Criterion D (36 CFR 60.4) and designation as a State Archeological Landmark (13 TAC 26.8[1, 2]). Although the cultural materials appear to be sparse and there is some obvious disturbance in the surrounding sediments, the site is buried in Holocene alluvium at a consistent depth within the Elm Creek floodplain, which suggests the cultural deposits retain some integrity. If this is the case and if sufficient quantities of cultural materials are present to allow recovery of interpretable samples, then 41GZ243 could contain a temporally discrete cultural component with the capacity to contribute important information about the prehistory of this part of the Texas coastal plain. Further work in the form of additional trenching and manual excavations would be needed to determine whether the site actually has these

Figure 11. View of the east wall of Trench 3 in the FM 108 project area showing bioturbated sandy sediments containing 41GZ243.

qualities and hence is eligible for National Register listing and State Archeological Landmark designation under Criterion D.

No further work is recommended, however, because 41GZ243 is buried at 1.2 m below the surface, and project schematics indicate there will be no subsurface cutting in this area. Hence, assuming construction is carried out consistent with the schematics, 41GZ243 should not be affected (36 CFR 800.4[d.1]). If project plans change to include subsurface impacts in the area near 41GZ243, archeological testing is recommended to assess the site.

SUMMARY AND RECOMMENDATIONS

In November and December 2012, personnel with Prewitt and Associates, Inc., conducted archeological surveys of four proposed bridge replacement locations in the Texas Department of Transportation's Yoakum District: County Road 39 at an unnamed stream in rural Victoria County, FM 532 at the West Prong of the Lavaca River at the edge of the town of Moulton in Lavaca County, FM 951 at the North Fork of Queens Creek in rural DeWitt County, and FM 108 at a branch of Elm Creek near the town of Smiley in Gonzales County. The project areas range in size from 0.7 to 2.9 acres, with all but one restricted to existing highway rights of way. The County Road 39 project area consists of both existing right of way and temporary construction easements. The surveys were accomplished through inspection of surface exposures and cut banks and excavation of 29 backhoe trenches. The County Road 39, FM 532, and FM 951 project areas were found to be devoid of archeological sites. No further work is recommended for them. A single archeological site, 41GZ243, was identified in the FM 108 project area. Site 41GZ243 is considered to be potentially eligible for listing in the National Register of Historic Places and designation as a State Archeological Landmark, but no further work is recommended because the site is buried and will not be affected. If project plans change to include subsurface impacts in the area near 41GZ243, archeological testing is recommended to assess the site.

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APPENDIX: Trench Profile Descriptions

Appendix: Trench profile descriptions

Trench	Depth (cm)	Description
CR 39 at Unnamed Stream, CSJ 0913-27-051		
1	0–20	Dark gray to brown (7.5YR 4/1 to 7.5YR 4/2) loamy sand with numerous gravels
	20–45	Mottled brown and light gray loamy to clayey sand with numerous gravels; 10YR 5/3 upper half, predominantly 10YR 6/2 lower half; iron staining
	45–105	Grayish brown clay with iron deposits throughout; numerous gravels; 10YR 4/1
2	0–50	Construction fill
	50–72	Brown (10YR 4/3) loamy sand with numerous gravels
	72–90	Brown (10YR 5/3) sandy clay with numerous gravels; drier with lighter-colored areas
	90–100	Light yellowish brown (10YR 6/4) coarse-grained sand above yellowish brown (10YR 5/4) medium-grained sand
	100–122	Light brownish gray (10YR 6/2) gleyed sandy clay mixed with clayey sand; numerous gravels and high-density iron staining; few FeMn concretions
3	0–50	Construction fill
	50–57	Grayish brown (10YR 5/2) to brown (10YR 5/3) silty sand; very dry with fine gravels; pockets of light yellowish brown (10YR 6/4) coarse-grained sand infilling roots or rodent runs
	57–68	Dark brown (7.5YR 4/4) coarse loamy sand with thin lenses of light gray (10YR 7/2) sand
	68–115	Gray (10YR 6/1) to light yellowish brown (10YR 6/4) mottled clay; discoloration from iron staining; small gravels
4	0–15	Dark brown (7.5YR 3/4) loamy sand with numerous gravels
	15–28	Strong brown (7.5YR 5/6) coarse-grained sand with numerous gravels; pockets of loamy sand
	28–47	Light brownish gray (10YR 6/2) to gray (10YR 6/1) clay
	47–65	Light brownish gray (10YR 6/2) clay mottled with brownish yellow (10YR 6/6–6/8) clay
5	0–20	Very dark grayish brown (10YR 3/2) silty sand with numerous gravels
	20–40	Yellowish brown (10YR 5/4) sandy silty clay with numerous sorted gravels
	40–130	Dark grayish brown (10YR 42) clay mottled with dark yellowish brown (10YR 4/4–4/6) clay, likely from FeMn in soil
6	0–40	Brown (10YR 4/3) silty sand with numerous unsorted graves; likely construction fill
	40–70	Brown (10YR 5/3) silty clay with numerous gravels; distinct boundary between upper layer
	70–130	Brown (10YR 4/3) silty clay mottled with dark yellowish brown (10YR 4/6) clay; few gravels
7	0–30	Construction fill
	30–60	Grayish brown (10YR 5/2) sandy loam with numerous gravels and some FeMn staining throughout
	60–70	Yellowish brown (10YR 5/4) to light yellowish brown (10YR 6/4) coarse- to medium-grained sand; likely infilled roots and rodent runs
	70–90	Gray (10YR 6/1) clay with moderate iron mottling and FeMn concretions throughout
8	0–30	Construction fill
	30–50	Brown (10YR 5/3) loamy sand blending into lower zone of similar sand
	50–60	Very pale brown (10YR 7/3) fine-grained sand with some FeMn concretions
	60–85	Gray (10YR 6/1) sandy clay with few gravels; slightly darker (10YR 6/2) in the upper part becoming slightly lighter with depth (10YR 6/1)
FM 532 at West Prong of the Lavaca River, CSJ 1007-03-017		
1	0–20	Very dark grayish brown (10YR 3/2) clay loam with few carbonates and

Appendix, continued

Trench	Depth (cm)	Description
		distinct lower boundary; some construction fill
	20–30	Grayish brown (10YR 5/2) sandy silt/silty sand with few fine gravels and carbonates throughout
	30–100	Black (10YR 2/1) clay with few carbonates; diffuse lower boundary
	100–170	Gray (10YR 5/1) clay with numerous carbonates; likely lighter in color due to high carbonates
2	0–20	Construction fill
	20–40	Very dark gray (10YR 3/1) silty clay with few carbonates
	40–55	Dark gray (10YR 4/1) to dark grayish brown (10YR 4/2) clay
	55–120	Very dark gray (10YR 3/1) gray clay with few carbonates
	120–150	Black (10YR 2/1) clay with few carbonates
3	0–30	Dark grayish brown (10YR 4/2) to very dark grayish brown (10YR 3/2) clay loam; some construction fill
	30–90	Very dark grayish brown (10YR 3/2) loamy clay with carbonates throughout
	90–135	Pale yellow (2.5Y7/4) to yellow (2.5Y7/6) clay
FM 951 at North Fork of Queens Creek, CSJ 0839-04-010		
1	0–110	Construction fill
	110–150	Old road bed evidenced by very large and numerous cobbles
	150–170	Dark gray (10YR 4/1) silty clay loam
2	0–40	Dark gray (10YR 4/1) silty clay loam with a very thin layer of construction fill at the surface (less than 5 cm)
	40–70	Light yellowish brown (10YR 6/4) sandy loam
	70–120	Pale brown (10YR 6/3) loamy sand
	120–160	Black (10YR 2/1) clay
3	0–60	Very dark gray (10YR 3/1) silty clay loam
	60–180	Pale brown (10YR 6/3) medium- to coarse-grained loose sand
4	0–30	Construction fill
	30–110	Dark gray (10YR 4/1) silty clay loam
	110–150	Very dark gray (10YR 3/1) loamy clay; band of yellowish brown (10YR 5/4) sand at 113–119 cm)
	150–188	Black (10YR 2/1) clay with numerous carbonates
5	0–20	Construction fill
	20–60	Dark gray (10YR 4/1) silty clay loam
	60–70	Pale brown (10YR 6/3) sand (pocket of sand in center of trench wall)
	70–145	Light brownish gray (10YR 6/2) clay loam with numerous carbonates
6	0–50	Construction fill
	50–70	Dark gray (10YR 4/1) silty clay loam
	70–140	Light yellowish brown (10YR 6/4) loamy clay with numerous carbonates
7	0–40	Construction fill
	40–100	Dark gray (10YR 4/1) silty clay loam
	100–144	Light yellowish brown (10YR 6/4) loamy clay with numerous carbonates
FM 108 at Branch of Elm Creek, CSJ 0715-02-013		
1	0–40	Construction fill
	40–150	Very dark grayish brown (10YR 3/2) silty clay loam
2	0–30	Very dark grayish brown (10YR 3/2) clay loam
	30–50	Brown (10YR 5/3) silty sand
	50–70	Very dark grayish brown (10YR 3/2) clay loam
	70–130	Dark brown (10YR 4/3) sandy clay loam
	130–160	Pale brown (10YR 6/3) clay
3	0–25	Very dark grayish brown (10YR 3/2) clay loam
	25–170	Predominantly dark brown (10YR 4/3) sandy silt, but bioturbation has mixed sediment; very swirled appearance

Appendix, continued

Trench	Depth (cm)	Description
4	0–60	Very dark grayish brown (10YR 3/2) clay loam
	60–100/170	Dark brown (10YR 4/3) clay loam; dips toward the north end of the trench and becomes thicker
	100/170–200	Yellowish brown (10YR 5/6) silty sandy loam
5	0–40	Construction fill
	40–60	Very dark grayish brown (10YR 3/2) clay loam
	60–130	Very dark brown (10YR 3/1) clay loam
	130–160	Dark brown (10YR 4/3) silty clay loam
6	0–160	Very dark gray (10YR 3/1) clay loam; very dry and compact with numerous carbonates that increase with depth
7	0–30	Construction fill
	30–45	Black (10YR 2/1) clay loam
	45–90	Very dark grayish brown (10YR 3/2) silty clay loam
	90–150	Dark brown (10YR 4/3) silty clay loam
	150–170	Dark brown (10YR 4/3) loamy clay
8	0–60	Very dark grayish brown (10YR 3/2) clay loam; diffuse lower boundary; some construction fill in south end of trench
	60–80/100	Dark brown (10YR 3/3) silty clay loam
	80–90	Dark brown (10YR 4/3) silty clay loam; possible buried soil that does not extend along the full length of the trench
	90–130	Brown (10YR 5/3) silty sand; lower boundary is discrete, while upper boundary is diffuse
	110–130	Dark brown (10YR 4/3) silty clay loam; small pocket of sediment confined to the northern end of trench
	90–150	Light gray (10YR 7/2) sand; flood deposit with discrete lower boundary and diffuse upper boundary; surrounds Zone 5
	125–170	Yellowish brown (10YR 5/4) silty clay loam
9	0–30	Construction fill
	30–110	Very dark grayish brown (10YR 3/2) clay loam
	110–160	Pale brown (1YR 6/3) silty clay loam
10	0–50	Very dark grayish brown (10YR 3/2) clay loam
	50–95	Dark grayish brown (10YR 4/2) clay loam
	95–120	Grayish brown (10YR 5/2) loamy clay
11	0–20	Construction fill
	20–100	Dark brown (10YR 3/1) silty clay loam
	100–150	Very dark brown (10YR 4/5) clay loam; small pockets of alluvial sand throughout